

Description of Program of Research

AES Corporation (“AES”) is a manufacturer of security system solutions, including long-range wireless communications equipment. This equipment is the only patented owner operated and controlled network which uses licensed radio spectrum to form a mesh radio network that is deployed in over a hundred thousand locations worldwide with more than 750,000 subscriber units installed. AES equipment is used by residential, business and government customers. Testing of new products and product improvements is conducted in and around AES’s facilities in Peabody, Massachusetts – although some testing may be conducted further outside the area in order to simulate a wide-area mesh system. Because AES equipment is deployed both in the United States and overseas in Canada, South America and elsewhere, it is critically important that AES be able to test its equipment in a real world environment with the particular technical parameters that will replicate each individual customer’s use in the field prior to the delivery of a system for deployment so that it can verify product operation, radio signal propagation and communications effectiveness. Additionally, AES has equipment under development that will require testing in order to ensure that the equipment will perform as expected by its end-users.

As discussed above, this Experimental Radio Service license application will allow AES to test its devices in real world conditions prior to delivery in order to ensure proper operation prior to shipment. Real world testing – as opposed to bench testing – will allow AES to ensure that its equipment will be able to transmit alarm signals and other critical information in the event of an emergency. Additionally, such real world testing will also allow AES to make equipment improvements as well as develop more efficient equipment for marketing in the United States and throughout the world in a more efficient manner. Further, this testing is necessary to ensure product safety and compliance with regulations in certain countries and the European Union in which AES offers its devices for sale.

While it would be ideal for AES to be able to test its devices in a shielded enclosure, this is not practical since AES equipment is designed to operate as a mesh network over a wide area. As a result, use of a shielded enclosure will not permit AES to replicate the environment necessary to ensure that the equipment will work properly. The license requested herein will permit AES to make the necessary testing of its products that cannot be feasibly tested in a shielded environment in order to ensure product safety, quality and regulatory compliance.

The AES test system will utilize subscriber units that are mounted at seven locations to replicate a system that has been a service provider or government user. The system consists of a transceiver and a variety of antenna types, depending upon the location

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where the units are being deployed – although generally an omni-directional antenna will be used in order to allow the dispersal of packet transceivers.

Response to Item No. 15 – Owner and Operator

AES has indicated in the affirmative that it will own and operate the station as well as the equipment that is used for the experiment. AES will supervise the physical operation of the equipment by its personnel and any third party contractor that might be hired during any testing scenarios.

Duration

A license term of two (2) years is requested, since products are tested on an ongoing (although intermittent) basis. Total operation time on any one frequency is generally expected to be less than 8 hours (480 minutes) over the course of 5 days per month; although there could be limited circumstances where additional testing is required that could result in testing over 36 hours (20,160 minutes) over the course of a month.

Frequencies

AES has requested use of the 30-50 MHz band, the 138-174 MHz band and the 403.1-470 MHz band. While a large range of permitted frequencies have been requested in the different bands listed above, actual testing will be conducted on discrete frequencies in each of the bands, depending upon the requirements for the particular test. Testing will be conducted in a manner that replicates usage in the United States for equipment that will be deployed in the United States as well as in accordance with the requirements for foreign standards bodies for equipment that will ultimately be deployed outside the United States. These standards include those promulgated by the European Union and other countries and testing will comply with appropriate best practices in order to conform to individual standards required by the target market. To minimize the potential of interference to licensed wireless operations, the FCC license database will be consulted when selecting frequencies for testing, with a preference for the Part 90 shared channels where possible.

Emission Designator

The emission(s) designator(s) will be 11K2F2D ((FM) 2.5 kHz deviation audio frequency shift keying within a 12.5 kHz channelspace) and 6K501FD (4.8 kbps GFSK in 12.5 kHz channelspace).

Power Levels

AES has selected an output power and effective radiated power (ERP) of 5 watts in order to provide it with flexibility to test under real world conditions for equipment that will be exported outside the United States. For equipment that will be used in the United States, AES will test in conformance with the FCC's Rules regarding output power and ERP as applicable to the particular frequency being used for the test. Thus, if the particular channel is a low power channel with a 2 watt limit, for equipment destined for use in the United States, AES will limit the output power and ERP to 2 watts in that scenario.

Stop Buzzer Contact Information

Penelope Lucinian, Engineer for AES, is the technical contact for this request. Ms. Lucinian will be responsible for the operations to be conducted and, in accordance with Rule Section 5.308, will be the "Stop Buzzer" point of contact that is available at all times during the operation of each experiment conducted under the requested license in the event that operations must be terminated due to interference concerns. Ms. Lucinian can be reached at 978-535-7310 or by email at rftest@aes-corp.com.

Compliance with Human Exposure Limits

AES certifies that it will operate its experimental facilities in full compliance with IEEE standard C95.1 – 2019 regarding Safety Levels with Respect to Human Exposure to Electric, Magnetic and Radio Frequency Electromagnetic Fields, 0 Hz to 300 GHz." All personnel who operate the equipment are knowledgeable as to the effects of RF energy and will have the ability to control their exposure.

Conclusion

Grant of the instant application in support of AES's experimentation will contribute to AES's ability to develop and deploy reliable alarm monitoring radio frequency mesh equipment by ensuring that equipment can be designed for real world scenarios prior to deployment in different world-wide markets and conditions without receiving or causing interference to other devices or malfunction due to interference from other RF devices.